

### Listing of Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

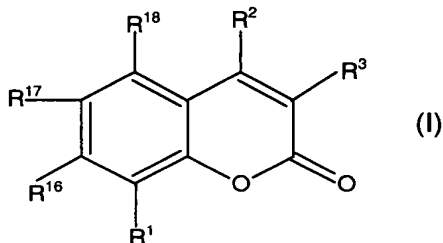
1 – 14. Cancelled.

15. (currently amended) A radiation-sensitive element comprising

(a) an aluminum substrate pretreated by electrochemical roughening and thereafter optionally anodizing or applying a hydrophilizing layer or both, wherein the electrochemical roughening is carried out with a hydrochloric acid electrolyte or an electrolyte consisting essentially of hydrochloric acid, and

(b) a radiation-sensitive, free-radical producing coating comprising

- (1) at least one free-radical polymerizable monomer with at least one ethylenically unsaturated polymerizable group and at least one P-OH group,
- (2) at least one sensitizer represented by formula (I)



and that, when exposed to imaging radiation and only in the presence of a co-initiator, forms free radicals,

wherein

- (i)  $R^1$ ,  $R^{16}$ ,  $R^{17}$  and  $R^{18}$  are independently a hydrogen atom, a halogen atom,  $C_1$ - $C_{20}$  alkyl, -OH, -O- $R^4$  or -NR<sup>5</sup>R<sup>6</sup>, wherein  $R^4$  is  $C_1$ - $C_{20}$  alkyl,  $C_5$ - $C_{10}$  aryl or  $C_6$ - $C_{30}$  aralkyl and  $R^5$  and  $R^6$  are independently a hydrogen atom or  $C_1$ - $C_{20}$  alkyl; or

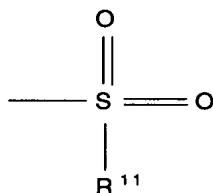
- (ii)  $R^1$  and  $R^{16}$ ,  $R^{16}$  and  $R^{17}$ , or  $R^{17}$  and  $R^{18}$  together form a 5- or 6-membered heterocyclic ring with a N or O heteroatom in one or both positions adjacent to the phenyl ring, or
- (iii) or  $R^1$ ,  $R^{16}$  and  $R^{17}$  form two adjacent 5- or 6-membered heterocyclic rings with an N or O heteroatom in a position adjacent to the phenyl ring;

wherein each formed 5- or 6-membered heterocyclic ring can independently be substituted with one or more  $C_1$ - $C_6$  alkyl,

with the proviso that at least one of  $R^1$ ,  $R^{16}$ ,  $R^{17}$  and  $R^{18}$  is not a hydrogen atom or  $C_1$ - $C_{20}$  alkyl,

$R^2$  is a hydrogen atom,  $C_1$ - $C_{20}$  alkyl,  $C_5$ - $C_{10}$  aryl or  $C_6$ - $C_{30}$  aralkyl and

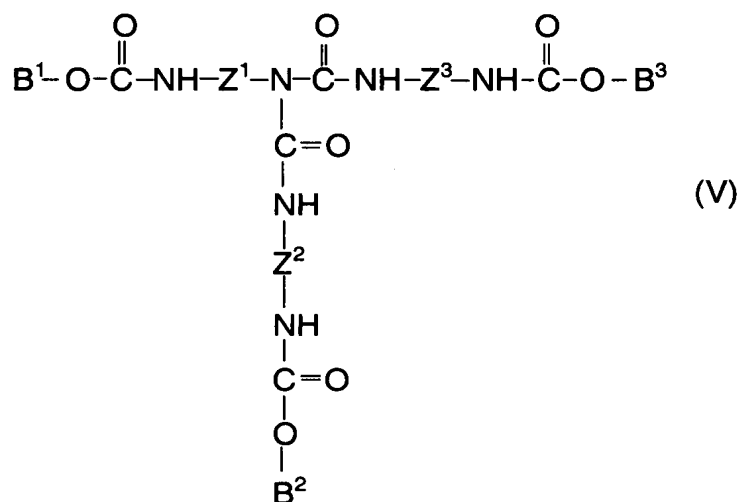
$R^3$  is a hydrogen atom,  $-\text{COOH}$ ,  $-\text{COOR}^7$ ,  $-\text{COR}^8$ ,  $-\text{CONR}^9\text{R}^{10}$ ,  $-\text{CN}$ ,  $C_5$ - $C_{10}$  aryl,  $C_6$ - $C_{30}$  aralkyl, a 5- or 6-membered heterocyclic ring,  $-\text{CH}=\text{CH}-\text{R}^{12}$  or



wherein  $R^7$  is  $C_1$ - $C_{20}$  alkyl,  $R^8$  is  $C_1$ - $C_{20}$  alkyl or a 5- or 6-membered heterocyclic ring,  $R^9$  and  $R^{10}$  are independently a hydrogen atom or  $C_1$ - $C_{20}$  alkyl,  $R^{11}$  is  $C_1$ - $C_{12}$  alkyl or alkenyl, a heterocyclic non-aromatic ring or  $C_5$ - $C_{20}$  aryl optionally including an O, S or N heteroatom, and  $R^{12}$  is  $C_5$ - $C_{10}$  aryl or a 5- or 6-membered heterocyclic, optionally aromatic, ring;

or R<sup>2</sup> and R<sup>3</sup>, together with the carbon atoms to which they are bonded, form a 5- or 6-membered, optionally aromatic, ring;

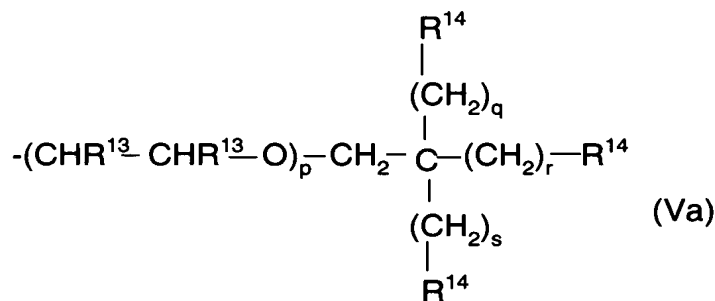
- (3) at least one onium compound, hexaarylbiimidazole compound, or trihalogenomethyl compound as a co-initiator that is unable to absorb imaging radiation, but in the presence of said sensitizer that is exposed to imaging radiation, forms free radicals;
- (4) at least one biuret oligomer represented by formula (V)



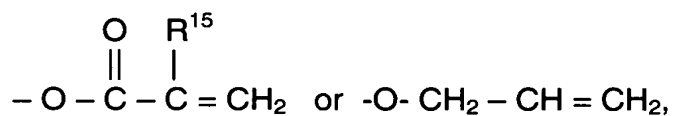
wherein Z<sup>1</sup>, Z<sup>2</sup> and Z<sup>3</sup> are independently C<sub>2</sub>-C<sub>18</sub> alkanediyl or C<sub>6</sub>-C<sub>20</sub> arylene,

B<sup>1</sup>, B<sup>2</sup> and B<sup>3</sup> are independently

-(CHR<sup>13</sup> - CHR<sup>13</sup> - O)<sub>p</sub> - CH<sub>2</sub> - CH = CH<sub>2</sub> or a fragment represented by formula (Va)



wherein  $R^{13}$  is independently a hydrogen atom or  $-CH_3$  and  $p$  is 0 or an integer from 1-10, each  $R^{14}$  is independently a hydrogen atom,



$R^{15}$  is a hydrogen atom or  $C_1-C_{12}$  alkyl and

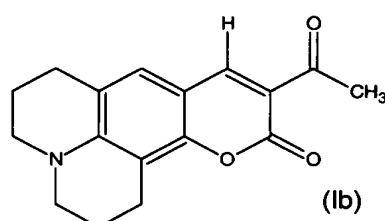
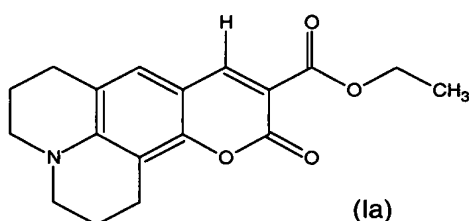
$q$ ,  $r$  and  $s$  independently of each other are 0 or 1,

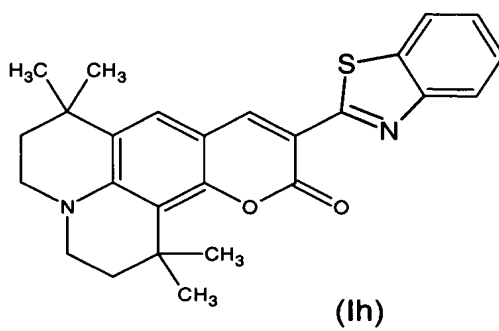
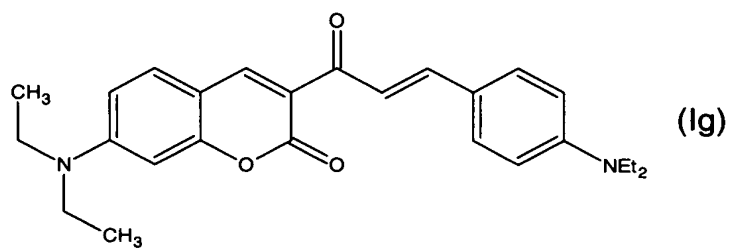
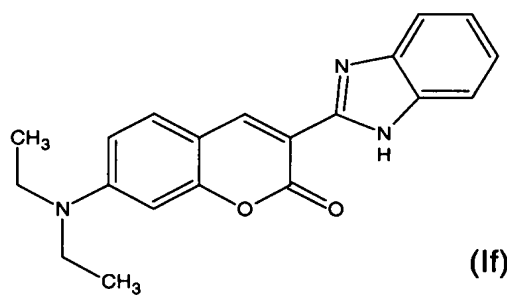
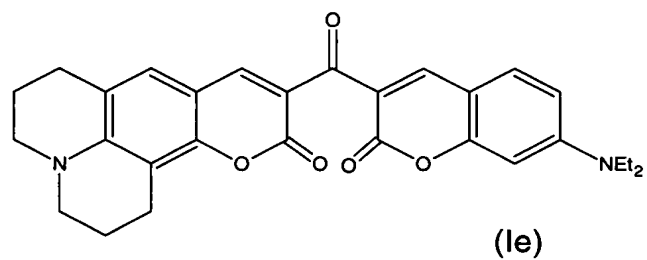
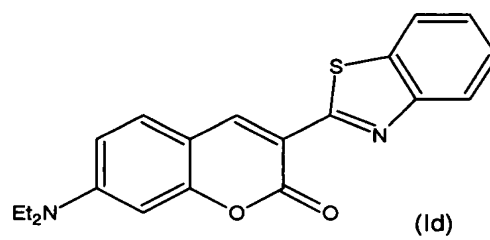
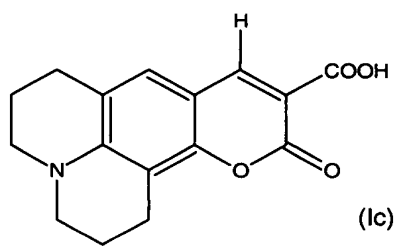
with the proviso that for  $B^1$ ,  $B^2$  and  $B^3$  at least one  $R^{14}$  is not a hydrogen atom if  $B^1$ ,  $B^2$  and  $B^3$  are all a fragment represented by formula (Va), and

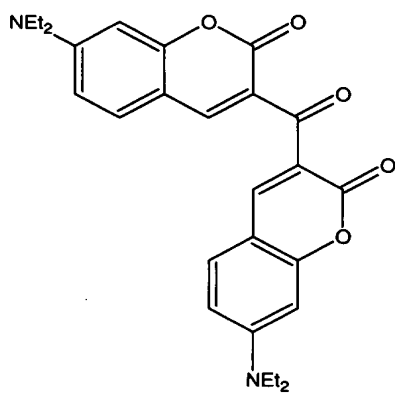
(5) optionally at least one metallocene.

16. (previously presented) The radiation-sensitive element according to claim 15, wherein the radiation-sensitive coating additionally comprises at least one further component comprising free-radical polymerizable monomers, oligomers, or prepolymers that are different from monomers (b)(1) of the radiation-sensitive coating, alkali-soluble binders, thermopolymerization inhibitors, dyes, plasticizers, chain transfer agents, leuco dyes, inorganic fillers or surfactants.

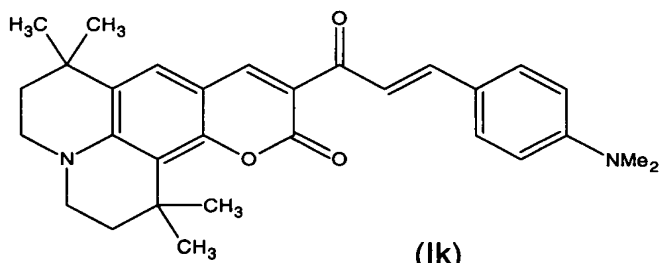
17. (previously presented) The radiation-sensitive element according to claim 15, wherein the sensitizer is represented by formulas Ia-Ih, Ij-lk and Im-lq, or mixtures thereof:



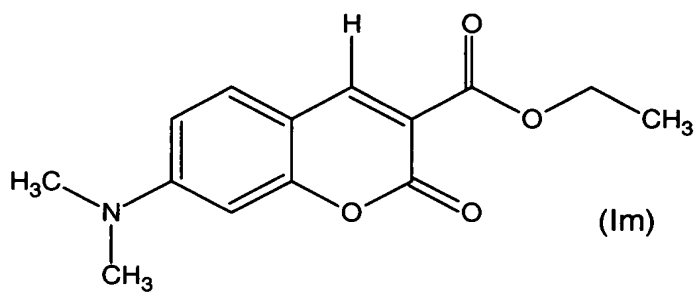




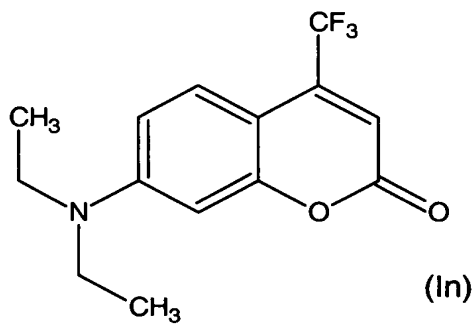
(lj)



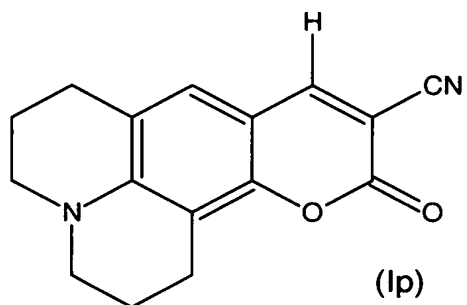
(lk)



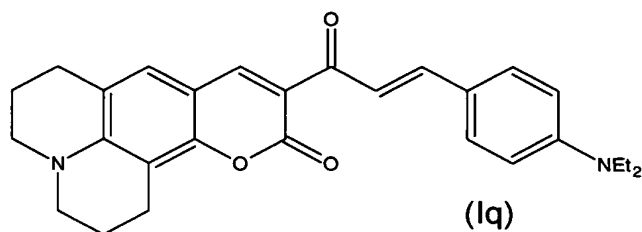
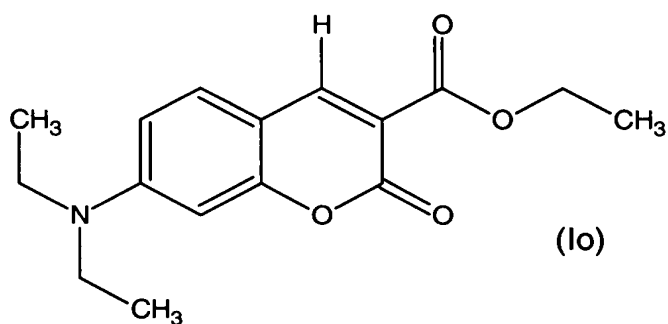
(lm)



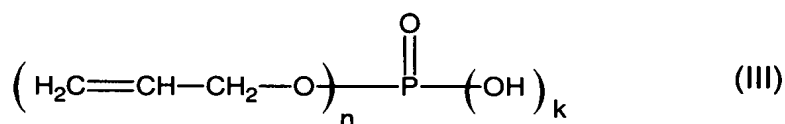
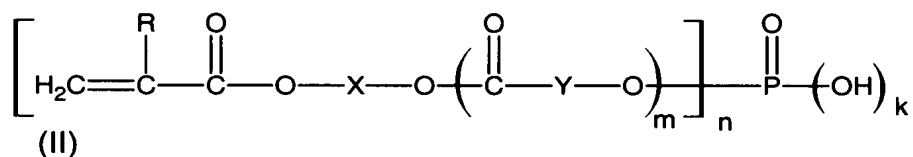
(ln)



(lp)



18. (previously presented) The radiation-sensitive element according to claim 15, wherein the coinitiator is an iodonium compound or a hexaarylbiimidazole compound.
19. (previously presented) The radiation-sensitive element according to claim 15, wherein the radiation-sensitive coating comprises a metallocene with a metal of the fourth subgroup as a central atom.
20. (previously presented) The radiation-sensitive element according to claim 15, wherein the free-radical polymerizable monomer with at least one ethylenically unsaturated group and at least one P-OH group is represented by formulas (II) and (III):



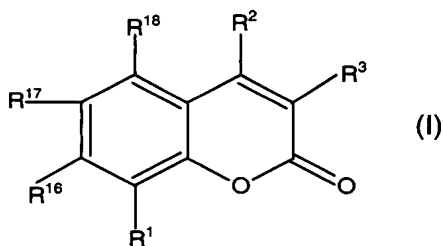
wherein n is 1 or 2,  
 m is 0 or 1,  
 k is 1 or 2,  
 $n + k = 3$ ,  
 R is a hydrogen atom or C<sub>1</sub>-C<sub>12</sub> alkyl,  
 X is C<sub>2</sub>-C<sub>12</sub> alkanediyl and  
 Y is C<sub>2</sub>-C<sub>12</sub> alkanediyl.

21. (previously presented) The radiation-sensitive element according to claim 15,  
 wherein in the biuret of formula (V) each of Z<sup>1</sup>, Z<sup>2</sup>, and Z<sup>3</sup> are the same.

22. (previously presented) The radiation-sensitive element according to claim 15,  
 wherein an oxygen-impermeable overcoat is provided on the radiation-sensitive coating.

23. (currently amended) A process for the production of an imaged element  
 comprising the steps of:

- (a) providing a radiation-sensitive element comprising
  - (1) an aluminum substrate pretreated by electrochemical roughening and thereafter optionally anodizing or applying a hydrophilizing layer or both, wherein the electrochemical roughening is carried out with a hydrochloric acid electrolyte or an electrolyte consisting essentially of hydrochloric acid, and
  - (2) a radiation-sensitive coating, free radical-producing comprising
    - (i) at least one free-radical polymerizable monomer with at least one ethylenically unsaturated polymerizable group and at least one P-OH group,
    - (ii) at least one sensitizer represented by formula (I)





and that, when exposed to imaging radiation and only in the presence of a co-initiator, forms free radicals,

wherein

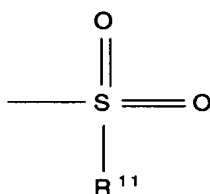
- (a)  $R^1$ ,  $R^{16}$ ,  $R^{17}$  and  $R^{18}$  are independently a hydrogen atom, a halogen atom,  $C_1$ - $C_{20}$  alkyl,  $-OH$ ,  $-O-R^4$  or  $-NR^5R^6$ , wherein  $R^4$  is  $C_1$ - $C_{20}$  alkyl,  $C_5$ - $C_{10}$  aryl or  $C_6$ - $C_{30}$  aralkyl and  $R^5$  and  $R^6$  are independently a hydrogen atom or  $C_1$ - $C_{20}$  alkyl; or
- (b)  $R^1$  and  $R^{16}$ ,  $R^{16}$  and  $R^{17}$ , or  $R^{17}$  and  $R^{18}$  together form a 5- or 6-membered heterocyclic ring with a N or O heteroatom in one or both positions adjacent to the phenyl ring, or
- (c) or  $R^1$ ,  $R^{16}$  and  $R^{17}$  form two adjacent 5- or 6-membered heterocyclic rings with a N or O heteroatom in a position adjacent to the phenyl ring;

wherein each formed 5- or 6-membered heterocyclic ring can independently be substituted with one or more  $C_1$ - $C_6$  alkyl,

with the proviso that at least one of  $R^1$ ,  $R^{16}$ ,  $R^{17}$  and  $R^{18}$  is not a hydrogen atom or  $C_1$ - $C_{20}$  alkyl,

$R^2$  is a hydrogen atom,  $C_1$ - $C_{20}$  alkyl,  $C_5$ - $C_{10}$  aryl or  $C_6$ - $C_{30}$  aralkyl and

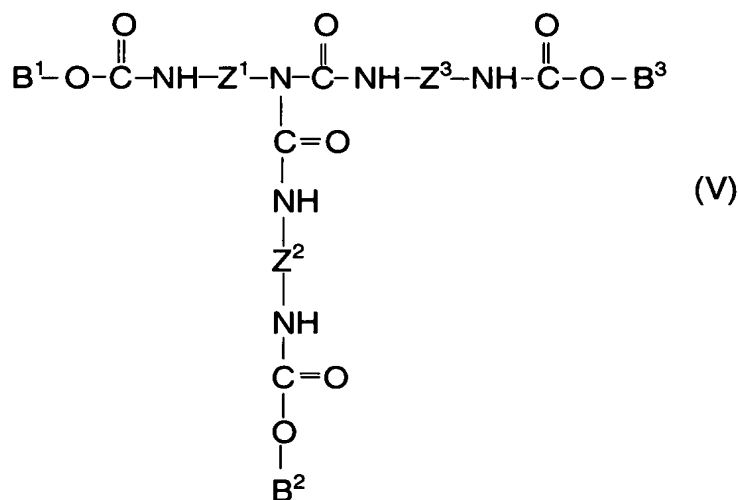
$R^3$  is a hydrogen atom,  $-COOH$ ,  $-COOR^7$ ,  $-COR^8$ ,  $-CONR^9R^{10}$ ,  $-CN$ ,  $C_5$ - $C_{10}$  aryl,  $C_6$ - $C_{30}$  aralkyl, a 5- or 6-membered heterocyclic ring,  $-CH=CH-R^{12}$  or



wherein  $\text{R}^7$  is  $\text{C}_1\text{-C}_{20}$  alkyl,  $\text{R}^8$  is  $\text{C}_1\text{-C}_{20}$  alkyl or a 5- or 6-membered heterocyclic ring,  $\text{R}^9$  and  $\text{R}^{10}$  are independently a hydrogen atom or  $\text{C}_1\text{-C}_{20}$  alkyl,  $\text{R}^{11}$  is  $\text{C}_1\text{-C}_{12}$  alkyl or alkenyl, a heterocyclic non-aromatic ring or  $\text{C}_5\text{-C}_{20}$  aryl optionally including an O, S or N heteroatom, and  $\text{R}^{12}$  is  $\text{C}_5\text{-C}_{10}$  aryl or a 5- or 6-membered heterocyclic, optionally aromatic, ring;

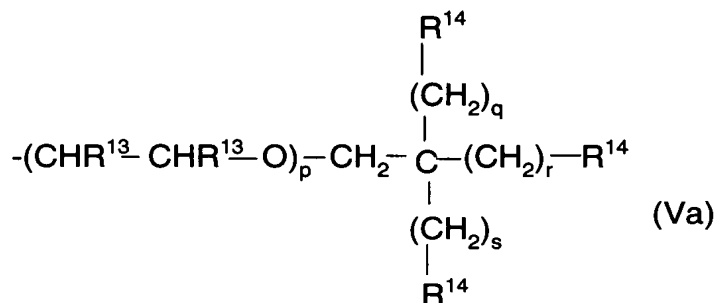
or  $\text{R}^2$  and  $\text{R}^3$ , together with the carbon atoms to which they are bonded, form a 5- or 6-membered, optionally aromatic, ring;

- (3) at least one onium compound, hexaarylbiimidazole compound, or trihalogenomethyl compound as a co-initiator that is unable to absorb imaging radiation, but in the presence of said sensitizer that is exposed to imaging radiation, forms free radicals;
- (4) at least one biuret oligomer represented by formula (V)

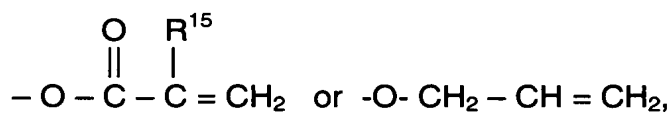


wherein  $Z^1$ ,  $Z^2$  and  $Z^3$  are independently  $C_2$ - $C_{18}$  alkanediyl or  $C_6$ - $C_{20}$  arylene,

$B^1$ ,  $B^2$  and  $B^3$  are independently  $-(CHR^{13}-CHR^{13}-O)_p-CH_2-CH=CH_2$  or a fragment represented by formula (Va)



wherein  $R^{13}$  is independently a hydrogen atom or  $-CH_3$  and  $p$  is 0 or an integer from 1-10, each  $R^{14}$  is independently a hydrogen atom,



$R^{15}$  is a hydrogen atom or  $C_1$ - $C_{12}$  alkyl and

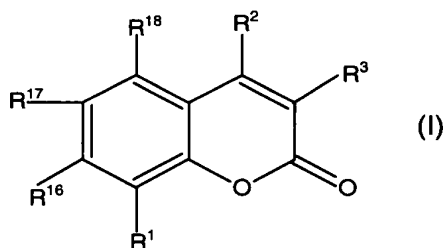
$q$ ,  $r$  and  $s$  independently of each other are 0 or 1,

with the proviso that for  $B^1$ ,  $B^2$  and  $B^3$  at least one  $R^{14}$  is not a hydrogen atom if  $B^1$ ,  $B^2$  and  $B^3$  are all a fragment represented by formula (Va), and

- (5) optionally at least one metallocene;
- (b) image-wise exposure of the element with radiation of a wavelength adjusted to the sensitizer present in the radiation-sensitive layer of the element;
  - (c) optionally heating;
  - (d) removing the unexposed areas with an aqueous alkaline developer; and
  - (e) optionally heating the imaged element obtained in step (d) or subjecting it to overall exposure or both.

24. (currently amended) A radiation-sensitive, free radical-producing composition comprising

- (a) at least one free-radical polymerizable monomer with at least one ethylenically unsaturated polymerizable group and at least one P-OH group,
- (b) at least one sensitizer represented by formula (I)



and that, when exposed to imaging radiation and only in the presence of a co-initiator, forms free radicals,

wherein

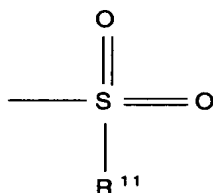
- (1)  $R^1$ ,  $R^{16}$ ,  $R^{17}$  and  $R^{18}$  are independently a hydrogen atom, a halogen atom,  $C_1$ - $C_{20}$  alkyl, -OH, -O- $R^4$  or -N $R^5R^6$ , wherein  $R^4$  is  $C_1$ - $C_{20}$  alkyl,  $C_5$ - $C_{10}$  aryl or  $C_6$ - $C_{30}$  aralkyl and  $R^5$  and  $R^6$  are independently a hydrogen atom or  $C_1$ - $C_{20}$  alkyl, or
- (2)  $R^1$  and  $R^{16}$ ,  $R^{16}$  and  $R^{17}$ , or  $R^{17}$  and  $R^{18}$  together form a 5- or 6-membered heterocyclic ring with a N or O heteroatom, in one or both positions adjacent to the phenyl ring, or
- (3)  $R^1$ ,  $R^{16}$  and  $R^{17}$  form two adjacent 5- or 6-membered heterocyclic rings with a N or O heteroatom, in a position adjacent to the phenyl ring,

wherein each formed 5- or 6-membered heterocyclic ring can independently be substituted with one or more  $C_1$ - $C_6$  alkyl,

with the proviso that at least one of  $R^1$ ,  $R^{16}$ ,  $R^{17}$  and  $R^{18}$  is not a hydrogen atom or  $C_1$ - $C_{20}$  alkyl;

$R^2$  is a hydrogen atom,  $C_1$ - $C_{20}$  alkyl,  $C_5$ - $C_{10}$  aryl or  $C_6$ - $C_{30}$  aralkyl and

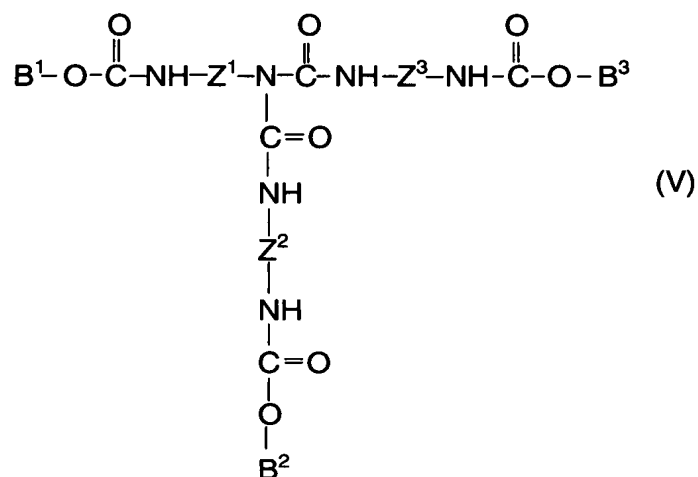
$R^3$  is hydrogen atom,  $or$ -COOH,  $-COOR^7$ ,  $-COR^8$ ,  $-CONR^9R^{10}$ ,  $-CN$ ,  $C_5$ - $C_{10}$  aralkyl, a 5- or 6-membered heterocyclic ring,  $-CH=CH-R^{12}$  or



wherein  $R^7$  is  $C_1$ - $C_{20}$  alkyl,  $R^8$  is  $C_1$ - $C_{20}$  alkyl or a 5- or 6-membered heterocyclic ring,  $R^9$  and  $R^{10}$  are independently a hydrogen atom or  $C_1$ - $C_{20}$  alkyl,  $R^{11}$  is  $C_1$ - $C_{12}$  alkyl, or  $C_1$ - $C_{12}$  alkenyl, a heterocyclic non-aromatic ring or  $C_5$ - $C_{20}$  aryl optionally including an O, S or N heteroatom, and  $R^{12}$  is  $C_5$ - $C_{10}$  aryl or a 5- or 6-membered heterocyclic, optionally aromatic, ring;

or  $R^2$  and  $R^3$ , together with the carbon atoms to which they are bonded, form a 5- or 6-membered, optionally aromatic, ring;

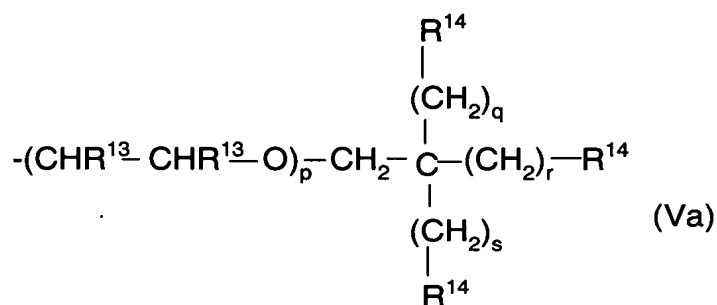
- (c) at least one onium compound, hexaarylbiimidazole compound, or trihalogenomethyl compound as a coinitiator that is unable to absorb imaging radiation, but in the presence of said sensitizer that is exposed to imaging radiation, forms free radicals;
- (d) at least one biuret oligomer represented by formula (V)



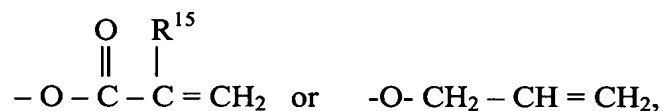
wherein  $\text{Z}^1$ ,  $\text{Z}^2$  and  $\text{Z}^3$  are independently  $\text{C}_2$ - $\text{C}_{18}$  alkanediyl or  $\text{C}_6$ - $\text{C}_{20}$  arylene,

$\text{B}^1$ ,  $\text{B}^2$  and  $\text{B}^3$  are independently

$-(\text{CHR}^{13}-\text{CHR}^{13}-\text{O})_p-\text{CH}_2-\text{CH}=\text{CH}_2$  or a fragment represented by formula (Va)



wherein  $\text{R}^{13}$  is independently a hydrogen atom or  $-\text{CH}_3$  and  $p$  is 0 or an integer from 1-10, each  $\text{R}^{14}$  is independently a hydrogen atom,



$\text{R}^{15}$  is a hydrogen atom or  $\text{C}_1$ - $\text{C}_{12}$  alkyl and

$q$ ,  $r$  and  $s$  independently of each other are 0 or 1,

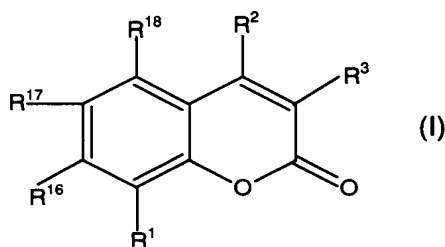
with the proviso that for B<sup>1</sup>, B<sup>2</sup> and B<sup>3</sup> at least one R<sup>14</sup> is not a hydrogen atom if B<sup>1</sup>, B<sup>2</sup> and B<sup>3</sup> are all a fragment represented by formula (Va), and

- (e) a solvent or solvent mixture; and
- (f) optionally at least one metallocene.

25. (previously presented) The radiation-sensitive composition according to claim 24, additionally comprising at least one further component comprising a free-radical polymerizable monomers, oligomers, or prepolymers that are different from monomer (a) of the radiation-sensitive composition, alkali-soluble binders, thermopolymerization inhibitors, dyes, plasticizers, chain transfer agents, leuco dyes, inorganic fillers or surfactants.

26. (currently amended) A process for the production of a radiation-sensitive element as defined in claim 15 comprising:

- (a) providing an aluminum substrate pretreated by electrochemical roughening and thereafter optionally anodizing or applying a hydrophilizing layer or both, wherein the electrochemical roughening is carried out with a hydrochloric acid electrolyte or an electrolyte consisting essentially of hydrochloric acid;
- (b) applying a radiation-sensitive, free radical-producing composition comprising
  - (1) at least one free-radical polymerizable monomer with at least one ethylenically unsaturated polymerizable group and at least one P-OH group,
  - (2) at least one sensitizer represented by formula (I) and that, when exposed to imaging radiation and only in the presence of a co-initiator, forms free radicals,



wherein

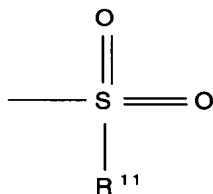
- (i)  $R^1$ ,  $R^{16}$ ,  $R^{17}$  and  $R^{18}$  are independently a hydrogen atom, a halogen atom,  $C_1$ - $C_{20}$  alkyl,  $-OH$ ,  $-O-R^4$  or  $-NR^5R^6$ , wherein  $R^4$  is  $C_1$ - $C_{20}$  alkyl,  $C_5$ - $C_{10}$  aryl or  $C_6$ - $C_{30}$  aralkyl and  $R^5$  and  $R^6$  are independently a hydrogen atom or  $C_1$ - $C_{20}$  alkyl, or
- (ii)  $R^1$  and  $R^{16}$ ,  $R^{16}$  and  $R^{17}$ , or  $R^{17}$  and  $R^{18}$  together form a 5- or 6-membered heterocyclic ring with a N or O heteroatom, in one or both positions adjacent to the phenyl ring, or
- (iii)  $R^1$ ,  $R^{16}$  and  $R^{17}$  form two adjacent 5- or 6-membered heterocyclic rings with a N or O heteroatom, in a position adjacent to the phenyl ring,

wherein each formed 5- or 6-membered heterocyclic ring can independently be substituted with one or more  $C_1$ - $C_6$  alkyl groups,

with the proviso that at least one of  $R^1$ ,  $R^{16}$ ,  $R^{17}$  and  $R^{18}$  is not a hydrogen atom or  $C_1$ - $C_{20}$  alkyl;

$R^2$  is a hydrogen atom,  $C_1$ - $C_{20}$  alkyl,  $C_5$ - $C_{10}$  aryl or  $C_6$ - $C_{30}$  aralkyl and  $R^3$  is hydrogen atom,  $-COOH$ ,  $-COOR^7$ ,  $-COR^8$ ,  $-CONR^9R^{10}$ ,  $-CN$ ,  $C_5$ - $C_{10}$  aralkyl, a 5- or 6-membered heterocyclic ring,  $-CH=CH-R^{12}$  or



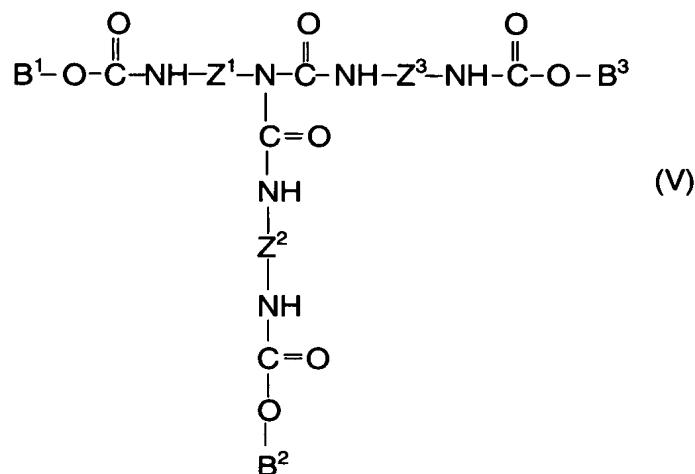


wherein  $\text{R}^7$  is  $\text{C}_1\text{-C}_{20}$  alkyl,  $\text{R}^8$  is  $\text{C}_1\text{-C}_{20}$  alkyl or a 5- or 6-membered heterocyclic ring,  $\text{R}^9$  and  $\text{R}^{10}$  are independently a hydrogen atom or  $\text{C}_1\text{-C}_{20}$  alkyl,  $\text{R}^{11}$  is  $\text{C}_1\text{-C}_{12}$  alkyl, or  $\text{C}_1\text{-C}_{12}$  alkenyl, a heterocyclic non-aromatic ring or  $\text{C}_5\text{-C}_{20}$  aryl optionally including an O, S or N heteroatom, and  $\text{R}^{12}$  is  $\text{C}_5\text{-C}_{10}$  aryl or a 5- or 6-membered heterocyclic, optionally aromatic, ring;

or  $\text{R}^2$  and  $\text{R}^3$ , together with the carbon atoms to which they are bonded, form a 5- or 6-membered, optionally aromatic, ring;

- (3) at least one onium compound, hexaarylbiimidazole compound, or trihalogenomethyl compound as a coinitiator that is unable to absorb imaging radiation, but in the presence of said sensitizer that is exposed to imaging radiation, forms free radicals;

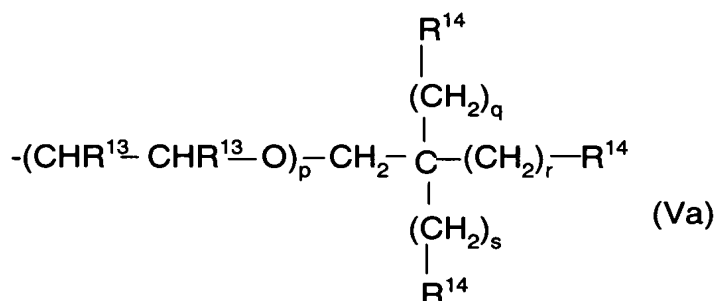
- (4) at least one biuret oligomer represented by formula (V)



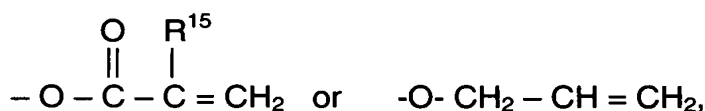
wherein  $Z^1$ ,  $Z^2$  and  $Z^3$  are independently  $C_2$ - $C_{18}$  alkanediyl or  $C_6$ - $C_{20}$  arylene,

$B^1$ ,  $B^2$  and  $B^3$  are independently

$-(CHR^{13}-CHR^{13}-O)_p-CH_2-CH=CH_2$  or a fragment represented by formula (Va)



wherein  $R^{13}$  is independently a hydrogen atom or  $-CH_3$  and  $p$  is 0 or an integer from 1-10, each  $R^{14}$  is independently a hydrogen atom,



$R^{15}$  is a hydrogen atom or  $C_1$ - $C_{12}$  alkyl and

$q$ ,  $r$  and  $s$  independently of each other are 0 or 1,

with the proviso that for each  $B^1$ ,  $B^2$  and  $B^3$  at least one  $R^{14}$  is not a hydrogen atom if  $B^1$ ,  $B^2$  and  $B^3$  are all a fragment represented by formula (Va), and

(5) a solvent or solvent mixture; and

(6) optionally at least one metallocene.

(c) drying; and

(d) optionally applying an oxygen-impermeable overcoat and drying.

27. (previously presented) The printing form produced by the process according to claim 23.